

**SUBJECT:** Summary of Mission Services Customer Forum (MSCF) #6

**DATE:** July 17, 2003

**LOCATION:** Building 3 Goett Auditorium, Goddard Space Flight Center (GSFC)

**TIME CONVENED:** 1:00 p.m. EST

**TIME ADJOURNED:** 3:20 p.m. EST

## I. Attendance

<i>Last Name</i>	<i>First Name</i>	<i>Organization</i>	<i>Email Address</i>	<i>Telephone #</i>
Alvarez	Marc	HTSI/CSOC/GSFC	malvarez@pop500.gsfc.nasa.gov	301-286-7161
Ambrose	Leslie A.	NASA/GSFC/451	leslie.l.ambrose@nasa.gov	301-286-7767
Bangerter	James A.	NASA/GSFC/451	James.A.Bangerter@nasa.gov	301-286-7306
Barclay	Cathy	HTSI/CSOC/GSFC	cathy.barclay@gsfc.nasa.gov	301-805-3221
Bartlett	Earl	ITT/GSFC	earl.bartlett@itt.com	301-809-2203
Benjamin	Merri	HTSI/CSR	merri.benjamin@gsfc.nasa.gov	301-805-3313
Bez	John	CSC/CSOC/GSFC	John.M.Bez.1@gsfc.nasa.gov	301-286-2970
Bissett	David	Booz Allen/GSFC	bissett_david@bah.com	301-805-5416
Booth	Michael	SGT/PAAC-II/450	Michael.S.Booth.1@gsfc.nasa.gov	301-286-6192
Booth	Walter	CSOC/GSFC/CSR	walter.booth@csoconline.com	301-805-3347
Brockdorff	Ronna	ITT/GSFC	ronna@class.gsfc.nasa.gov	301-809 2269
Cappellari	Jim	CSOC/GSFC/CSR	jim.cappellari@gsfc.nasa.gov	301-286-3296
Catena	John	NASA/GSFC	john.j.catena@nasa.gov	(301) 286-9572
Chang	Sue	ITT/GSFC	sue.chang@itt.com	(301) 809-2268
Clark	Jennifer	SGT/PAAC-II/450	Jennifer.G.Clark@gsfc.nasa.gov	301-286-6269
Conwell	Evette	NASA/GSFC/451	Evette.Conwell@nasa.gov	301-286-9809
Crizer	Michele	HTSI/428	micrizer@pop400.gsfc.nasa.gov	301-614-5541
Culley	Angela	AS&T/CSOC/GSFC	angela.culley@csoconline.com	301-805-3097
Curley	Joe	HTSI/CSOC/GSFC	joseph.curley@csoconline.com	301-805-3299
Davenport	Don	HTSI/CSOC/GSFC	Donald.Davenport@gsfc.nasa.gov	301-286-0702
Davis	Adrienne	CSOC/GSFC/CSR	adrienne.davis@csoconline.com	301-805-3357
Davis	Dave	NASA/GSFC	David.L.Davis@nasa.gov	757 824-1444
Duignan	Chuck	NASA/GSFC/291	Chuck.Duignan@nasa.gov	301-286-6342
Edwards	Betsy	NASA/HQ/M3	Betsy.Edwards@nasa.gov	202 358-4639
Elwood	Reily	FHA/CSOC/GSFC	Riley.J.Elwood.1@gsfc.nasa.gov	301 286-6492
Emerson	Curtis	NASA/GSFC/452	curtis.emerson@gsfc.nasa.gov	301-286-7670
Fatig	Curtis	NASA/GSFC/440.8	cfatig@hst.nasa.gov	301-286-0693
Field	Margaret	HTSI/ERBS	margaret.field@honeywell-tsi.com	301-614-5024
Frank	Joan	HTSI/CSOC/GSFC	Joan.frank@gsfc.nasa.gov	301-286-5991
Glass	Jeff	SGT/PAAC-II/450	Jeffrey.J.Glass.1@gsfc.nasa.gov	301 286-8056
Goni	Luis	Center for Space Studies, Universidad de Chile	lgoni@cec.uchile.cl	56-698-1702
Gonzales	Stephanie	HTSI/CSOC/GSFC	stephanie.gonzales@honeywell.com	410-964-7908
Gordon	Hayden H.	NASA/GSFC/WFF	Hayden.H.Gordon@gsfc.nasa.gov	757 824-1852
Hamilton	Robert	CSC/NPP	robert.l.hamilton.1@gsfc.nasa.gov	301-282-2082

# I. Attendance (continued)

Last Name	First Name	Organization	E-mail Address	Telephone #
Hartman	Kate	NASA/GSFC/496	Kathy.R.Hartman@nasa.gov	301-286-8329
Hervey	Jewel	NASA/JSC/SCDS	jewel.r.hervey@nasa.gov	281-483-0359
Hudgins	Bob	WSC/CSOC/GSFC	bhudgins@mail.wsc.nasa.gov	505-527-7078
Hunt	Reginald	SGT/PAAC-II/450	Reginald.K.Hunt.1@gsfc.nasa.gov	301-286-5197
Joesting	Dave	HTSI/CSOC/GSFC	david.joesting@gsfc.nasa.gov	301-805-3500
Jones	J. D.	HTSI/CSOC/GSFC	johnny.jones@csoconline.com	301-805-3374
Klitsch	Gerald	CSC/CSOC/GSFC	gklitsch@csc.com	301-805-3735
Lee	Dennis	GSFC Code 451	dlee@pop400.gsfc.nasa.gov	301-286-9712
Lenora	Nihal	CSOC/GSFC	nlenora@pop500.gsfc.nasa.gov	301-286-8854
Levine	Al	NASA/GSFC/451	Allen.J.Levine.1@gsfc.nasa.gov	301-286-9436
Macie	Ed	NASA/GSFC/428	Edward.J.Macie@nasa.gov	301-614-5416
Mateik	Dennis	HTSI/CSOC/GSFC	Dennis.Mateik@honeywell-tsi.com	301-805-3297
Mathis	Eric	HTSI/CSOC/GSFC	eric.mathis@gsfc.nasa.gov	301-805-3293
Michelsen	Howard	CSC/CSOC/GSFC	hmichels@csc.com	301-805-3738
Morrison	Debra	HTSI/Test Team	dmorrison@hst.nasa.gov	301-286-2958
Moton	Nina	SGT/PAAC-II/450	Nina.L.Moton.1@gsfc.nasa.gov	301-286-6268
Myers	Lynn	NASA/GSFC/451	C.L.Myers@nasa.gov	301-286-6343
Nguyen	Richard	LM/CSOC/GSFC	richard.nguyen@csoconline.com	301-805-3194
Owen	Jim	ITT/AES	Jim.Owen@itt.com	301-809-2242
Pataro	Pete	HST/LMTO/440.8	Peter.J.Pataro.1@gsfc.nasa.gov (ppataro@hst.nasa.gov)	301-286-2604
Penafiel	Catherine	LM/CSOC/GSFC	cathy.penafiel@csoconline.com	301-805-3142
Pifer	Fred	HTSI/CSOC/GSFC	fred.pifer@csoconline.com	301-805-3335
Polesel	Joe	CSC/CSOC/GSFC	apolesel@csc.com	301-805-3650
Quint	Karen	HTSI/CSOC/GSFC	karen.quint@csoconline.com	301-805-3294
Robles	Alvin	BAH/CSOC/GSFC	robles.alvin@bah.com	301-805-5436
Rodriguez	Bob	HTSI/CSOC/GSFC	roberto.rodriguez@gsfc.nasa.gov	301-805-3325
Russell	John	CSC/CSOC/GSFC	jrussell@csc.com	301-805-3795
Sadof	Donna	NASA/GSFC/452	Donna.M.Sadof@gsfc.nasa.gov	301-286-7588
Schaub	Michael	HTSI/CSOC/GSFC	mike.schaub@csoconline.com	301-805-3291
Schenk	Harry	HTSI/CSOC/GSFC	Harry.Schenk@csoconline.com	301-805-3786
Schneck	Bruce	HTSI/CSOC/GSFC	bruce.schneck@csoconline.com	301-805-3018
Sidotti	Jo Ann	HTSI/CSOC/GSFC	joann.sidotti@honeywell-tsi.com	301-805-3244
Skidmore	Rance	NASA/GSFC	rskidmore@qwest.net	480-883-3970
Small	Dennis	NASA/GSFC/GLAST	Dennis.A.Small@nasa.gov	301-286-8210
Smith	John	LM/CSOC/GSFC	John.Smith@csoconline.com	301-805-3111
Sodano	Bob	NASA/GSFC/581/444	Robert.J.Sodano.1@gsfc.nasa.gov	301-286-6506
Switalski	Len	SGT/CSOC/GSFC	leonard.switalski@csoconline.com	301-805-3046
Sypher	Steve	HTSI/CSOC/WSC	ssypher@mail.wsc.nasa.gov	505-527-7075
Thompson	Tim	CSC/CSOC/GSFC	tthompso@csc.com	301-286-5314
Walker	Jon Z.	NASA/GSFC/451	Jon.Z.Walker@nasa.gov	301-286-7795
Wynn	Harry	LM/HST/441	hwynn@hst.nasa.gov	301- 901-6047
Zillig	David	QSS/GSFC/452	david.zillig@gsfc.nasa.gov	301-286-8078

## **II. Opening Remarks**

Mr. Al Levine/Code 451, Service Planning and Analysis Manager, convened the forum by welcoming everyone and presenting an overview of the agenda along with opening remarks followed by a review of open action items. Mr. Levine identified three online sources from which additional information can be obtained regarding Code 450 resources. They are:

- <http://msp.gsfc.nasa.gov>
- <http://msp.gsfc.nasa.gov/tdrss/>
- <http://gdms.gsfc.nasa.gov>

### **Note**

Presentations referenced in the following paragraphs are available online at URL <http://www.gsfc.nasa.gov/mscf/>.

## **III. Information Technology Security**

Mr. Curtis Emerson, the Code 450 Computer Security Official, presented Information Technology (IT) Security updates. The new Code 400 Directorate Computer Security Engineer is Mr. Curtis Schwartz. Mr. Emerson issued reminders regarding the login warning banner required on all NASA owned or funded systems, the need to register public WWW servers, security training, and security alerts. Mr. Emerson's presentation also identified Code 400, Code 450, and Center-wide IT Security points of contact.

## **IV. Space Network Access System**

Mr. Earl Bartlett/ITT presented a Space Network (SN) Access System (SNAS) overview. The functionalities of the User Planning System (UPS) and the SN Web Services Interface (SWSI) will be incorporated into the SNAS allowing for a single customer interface to perform SN customer scheduling and real-time service monitoring and control. SNAS capabilities will include providing a networks-based customer interface for performing SN scheduling and real-time control and monitoring; accommodating customers who request SN services through both the Network Control Center Data System (NCCDS) and the Demand Access System (DAS); allowing access from the internet and the NISN Open and Closed IONet, and supporting easy system setup and workstation independence for SN customers. The system is comprised of the client software, the servers, and the database. The SNAS System Requirements Review (SRR) was held on July 8, 2003, and requirements are being updated based on the SRR. Draft documents are available on the SNAS website (<http://snas.gsfc.nasa.gov>). SNAS implementation is slated to begin in January 2004 with a projected operational readiness date of December 2005.

Mr. Bartlett was asked if there will be a requirement as to which system users could use? Mr. Keiji Tasaki/Code 452, Space Network Project Manager responded that it is recommended that SNAS be used when it becomes operational; but, users will have the option of continuing to use the UPS. Mr. Bartlett added that only SWSI not UPS can be used to schedule DAS. Mr. Tasaki emphasized that once SNAS goes operational, the legacy systems will no longer be maintained the SN.

Mr. Bartlett was asked if UPS requirements that are not going into SNAS are clearly defined? Mr. Bartlett stated that requirements are still being defined and they will be documented.

Mr. Bartlett was asked how do users perform concurrent Ground Network (GN) and SN planning and scheduling? This will be addressed in the DSMC presentation.

## **V. TDRSS Continuation and Transformational Communications Architectures**

Mr. Jon Walker/Code 451, Deputy Program Manager for Customer Commitment Office, discussed the TDRSS Continuation and the Transformational Communications Architecture (TCA) strategies. The SN loading is flat through 2010 with an expected drop-off thereafter due to uncertain requirements. TDRSSs 1-10 are projected to be replaced around the 2012-2013 timeframe. The challenge for NASA is how to achieve the transformation.

Two concepts are being considered. In the TCA era, a federal architecture would be developed comprised of a backbone relay network. It would provide relay services for NASA missions and other agencies and be controlled by a joint organization representing all stakeholders. This approach would relieve NASA and others of the operations and infrastructure requirements necessary for delivering Tracking and Data Acquisition services thereby increasing resources for expanding science and technology interests.

In the TDRSS continuation era, NASA replenishes its aging fleet and provides relay services among the user community. NASA would retain control of the services and represent all stakeholders. With this scenario, NASA continues to operate a space-based Tracking and Data Acquisition infrastructure that could accommodate expanding science and technology interests without impact from or impacting other government users. Enterprise heads are scheduled to meet in the September timeframe to render a decision.

Mr. Walker was asked which option would he prefer. He stated he would prefer the TDRSS Continuation concept, as it would allow NASA to control the services.

Mr. Walker was asked if customers designing missions for the 2012 timeframe should avoid TCA. Mr. Walker stated no, because TCA would provide the capability to meet users requirements.

## **VI. Ground Network**

Mr. Roger Clason/Code 453, Ground Network Project Manager, presented GN updates. Of primary significance is the uncertainty of the GN FY04, due to the fact that NASA HQ has not yet responded to initial budget requests/projections and the unknown CSOC to NENS transition costs. A response is expected from HQ within one to two weeks. The transition costs will become clearer when the NENS contract is awarded. As a result of the budget situation, services at Santiago and McMurdo may be impacted.

At Santiago, support will continue under the current contract through December 31, 2003. If the requested budget is approved and/or if CSOC to NENS transition costs are less than planned, services will continue at the current level. If funding is decreased, services may continue at reduced levels. Initial impact assessments are:

- SORCE: loss of several passes a month
- TOMS-EP: loss of scheduling flexibility
- ProSEDS: loss of planned support

Mr. Clason was asked how will the GOES ranging support from Santiago be handled. Mr. Clason stated that the project could go directly to Santiago or through the Universal Space Network (USN) to obtain support. In addition, it was suggested from the audience that DataLnyx would also be a viable option.

Mr. Clason was asked if funding is not provided, then what? Mr. Clason stated that some issues need to be discussed later.

McMurdo support will continue at current levels if the requested budget is approved; otherwise, support may terminate on October 1, 2003. X-Band only services via remote operations are under evaluation but it is deemed to be high risk. Initial impact assessments are:

- RadarSat 1 and ERS 2: loss of all planned support
- TRACE: loss of scheduling flexibility
- ACRIMSAT, COBE, GRACE, QuikScat, SAC-C, and WIRE: loss of contingency support
- DART: loss of planned support

Mr. Clason also reported on several on-going, expanded service initiatives, including the enhancement of the 13-meter antenna system (SG3) to provide a third antenna option at Svalbard; Aqua and Aura compatibility enhancements (completed and awaiting full testing); enhancements for ICESat and QuikScat scheduled for November 2003; enhancing MILA for orbital support capabilities to maintain proficiency and increase flexibility (to include adding IONet connectivity and PTPs, which should be completed by October 2003).

Pursuing contingency support services from NOAA ground stations such as; EOS support from Gilmore Creek station and ADEOS II support from Wallops station.

## **VII. Space Network**

Mr. Keiji Tasaki/Code 452, Space Network Project Manager, provided a summary of the last six months of SN support. A total of 8, 666 events were supported and the network achieved a proficiency rating of 99.974 percent surpassing the standard of excellence (99.95%). Mr. Tasaki discussed the TDRS-9 and TDRS-10 transition status. On July 17, 2003, a decision was made to swap F-7 and F-9 and to relocate F-8 to 79 degrees. The transition is expected to take approximately three months to complete.

Mr. Tasaki provided a status on recently initiated new capabilities. SWSI Release 1.0 (SN Legacy services only) is scheduled for July 2003. SWSI Release 1.1 (New DAS MAR services) is scheduled for August 2003. The DAS Interim Operational Capability (IOC) Review was held in June 2003. Site Acceptance Testing was completed in July 2003. The Final Operational Capability (FOC) Review is scheduled for November 2003.

Mr. Tasaki also summarized the status of upcoming new capabilities. Work is underway on the Ka-Band Ultra-High Rate User Services project. This effort will provide a full data relay capability at >1Gbps using the 650MHz BW channel associated with TDRS-8, TDRS-9 and TDRS-10 at Ka-Band by 2006. Several high level documents are to be completed by September 30, 2003.

Work has begun on the GUAM Back-up Antennas (an 11-meter and a 4.5-meter). The effort is scheduled be completed in 18-24 months. In addition, the GUAM upgrades recommended by the Independent Review Team Assessment will be implemented.

There are on-going activities associated with the SNAS task. The system is scheduled to become operational in December 2005.

An additional 3-5 Bilateral Ranging Transponder Systems (BRTS) will be purchased to augment the current set.

Funding has been identified for the DAS Forward Service, but no project lead assigned yet.

Mr. Tasaki was asked if there any plans to address the issue that DAS is not compatible with the second generation satellites. This was addressed in Mr. Walker's presentation.

### **VIII. Flight Dynamics Facility**

Ms. Donna Sadof/Code 452, Flight Dynamics Facility/Network Integration Center Manager, presented the Flight Dynamics Facility (FDF) status. During the April-June 2003 timeframe, FDF supported eight Expendable Launch Vehicle (ELV)/Payload real-time events, and planned and supported 65 maneuvers.

Under Code S highlights, FDF created SOHO-centered viewing data for the May 7<sup>th</sup> transit of the Solar disk by Mercury. This transit provided the SOHO project with a special opportunity for improved science instrument calibration. FDF is assisting the SOHO project in the investigation of the High Gain Antenna (HGA) pointing failure.

The FDF is also performing studies of possible smaller L1 halo orbits and the orbital transfer techniques for achieving them from the current orbit.

Under Code Y highlights, FDF developed and delivered scripts that will be used for Aura ascent maneuvers. FDF also completed validating the RTOD orbit determination system to determine its suitability for Aura.

Under Code M highlights, the FDF Real-time TDRS Beam Angle Display has been implemented on a replacement system using Satellite Tool Kit (STK). The system generates real-time graphic and tabular displays, and a display that shows tracking geometry as well as position of spacecraft relative to the beam footprint. Ms Sadof expressed the hope that users try the new implementation.

Ms. Sadof also discussed the FDF move to Building 13. In phase one, a single string backup with the capability of supporting most FDF functions will be configured in Building 13. No personnel will move during this phase. The planned completion date is December 2003. During phase two, Building 13 will become the primary facility with the configuration of a second string accompanied by personnel moves. A single string will be left in Building 28 and it will become the backup. Funding for phase two has yet to be granted and there is no scheduled completion date.

### **IX. Data Service Management Center**

Mr. Bob Hudgins/WSC, CSOC Presented the DSMC status. All DSMC systems and functions are operating nominally. On the SN side, operational functions continue to run very smoothly with no major system problems and very few operator errors. Monthly STS vector proficiency simulations are being run with FDF to maintain STS launch and landing vector management proficiency. In addition, an FDF analyst will travel to WSC about two weeks prior to the STS-114 launch to provide STS launch and landing vector management refresher training. WSC personnel are working with SWSI and DAS engineers to test and integrate the new systems and functions into the DSMC.

In the GN arena, scheduling operations continue to become more routine and less prone to operator error. Major training objectives for the expanded GN scheduling group, which now totals five people, are 75% completed with an anticipated completion date of October 2003. Continual GN scheduling proficiency training for the core SN schedulers on crew has improved the DSMC ability to provide a 24x7 GN contingency scheduling capability. One open security issue is being worked. The current DSMC GN scheduling system (WOTIS) configuration is not in compliance with NISN closed IONet security protocol. The anticipated completion date to bring the configuration into compliance is July 31<sup>st</sup>.

#### **X. Earth Science Mission Operations Project**

Mr. Ed Macie/GSFC-Code 428, discussed the Earth Science Mission Operation (ESMO) project status. SORCE was transitioned to operations and ICESat is pending transition. Preparations for the Aura launch and operations are ongoing. The launch date is no earlier than January 29, 2004. CSOC to MOMS contract transition activities are in progress. Continuing Space Operations Institute efforts with Capitol College.

The Morning Train constellation of Landsat7, EO-1, SAC-C, and Terra is successful. Mr. Macie noted that Landsat-7 experienced a problem with the ETM Plus instrument resulting in a limited imaging capability. An anomaly team is working the issue. If the instrument cannot be restored, it would mean a 30% loss of science.

The A-Train constellation of Aqua, Aura, Calipso, Cloudsat, Parasol, and Orbiting Carbon Observatory is in formulation. Mr. Macie expressed the concern that an extensive planning and scheduling effort will be required to insert all of the spacecrafts into their A-Train orbits which highlights the need for an integrated GN and SN planning and scheduling function.

#### **XI. Space Science Mission Operations Project**

Mr. Bob Sodano/Code 581, Mission Director, presented the Space Science Mission Operations (SSMO) project status. Mr. Sodano provided an organizational overview of the project. Mr. Sodano discussed the mission set and their associated parameters. Mr. Sodano provided a reentry analysis for the missions. Mr. Sodano stated that strategic planning activities are being coordinated with various agencies and elements to ensure best practices and lessons learned are applied to future missions.

Mr. Sodano discussed Space Link Extension (SLE) activities. An agreement has been reached to eliminate use of the 4800 Bit Block communications with DSN. DSN and ESA currently use SLE to facilitate inoperability. The SSMO is providing WIRE as an on-orbit test bed to evaluate AVTEC system in Wallops Antenna. A demonstration of SLE for SOHO commanding via ESA is under consideration.

Mr. Sodano also discussed several IT security issues. It was recently decided to move JPL/DSN off of the Closed IONet. This will cause some implications for GN that will have to be addressed. Implementation of the SAFS/CSAFS architecture raises the question of 'whether all operations concepts concerns are being addressed satisfactorily.'

Mr. Sodano also discussed areas for more work, including:

- The need to understand the impacts of the recent SOHO High Gain Antenna anomaly which will entail establishing new tracking requirements for DSN and the updating of updating of processes and documentation.

- The continuation of automation efforts, particularly with Wind/Polar/ACE. Establishing Svalbard as a SMEX GN resource.
- Working the CSOC to MOMS transitions issues.
- Defining requirements and establish viable backup control centers as necessary.

## **XII. Human Spaceflight**

Mr. Jim Bangerter/Code 451, Network Director Human Spaceflight presented the Human Spaceflight (HS) status. Mr. Bangerter discussed the ongoing activities as well as activities that will be conducted as part of the return to flight re-validation of the Integrated Network elements. Currently, return to flight is no earlier than March 04, 2004.

Mr. Bangerter also discussed issues related to the International Space Stations (ISS) Backup Control Center (BCC) to “keep science alive”. Several options are being reviewed as alternatives for establishing a ISS BCC for science data. GSFC is being looked at as a possible BCC.

Mr. Bangerter stated that a plan is being developed to conduct on-orbit testing of the ISS high data rates (75-150Mbps) during the week of August 4, 2003. JSC will lead the testing with support from GSFC and WSC.

Mr. Bangerter discussed the ISS Downlink Enhancement Architecture (IDEA), which is a ground systems infrastructure that will provide the ISS program the ability to enhance its science return from 50mbps to 150mbps over Ku band downlink. Implementation will occur in two phases with Phase 1 completion planned for November 30, 2003, and Phase 2 completion planned for December 2004.

Mr. Bangerter also discussed ESA Automated Transfer Vehicle (ATV) and NASDA H-II Transfer Vehicle (HTV) related activities. The ATV and HTV are logistics modules that will be used to re-supply the ISS. The initial launch date for ATV is September 2004 and the launch date for HTV is December 2007.

Mr. Bangerter also discussed the ESA Columbus-Terminal (COL-T), which is the interface for ESA science control and telemetry onboard the ISS. Col-T is looking at TDRSS as a backup to ARTEMIS (ESA Data Relay Satellite) and eventually as the prime Ka-band interface.

Mr. Bangerter also discussed the NASDA Japanese Experiment Module (JEM), which is the Japanese science lab on the ISS. JEM is currently undergoing integration testing at KSC.

Mr. Bangerter expressed his thanks for the great job done by the team he inherited from Mr. Sobchak.

## **XIII. Loading and Resource Issues**

Mr. David Joesting/CSOC System Engineering, presented a status on Loading and Resource. Mr. Joesting stated that both GN and SN resources will be sufficient to meet current CSOC Mission Set commitments under most conditions, although there will be times when contention for resources will occur. Mr. Joesting also stated that service planning continues to require better coordination.

Mr. Joesting discussed GN and SN support impact issues. GN issues include high priority activities creating impacts to other spacecraft nominal support requirements. In addition, spacecraft extensions have caused a continued high level of S-Band support.



SN issues include the continued increase in launch and early orbit customers requesting near continuous SA link support for several hours and significant dual (simultaneous) SA support. Mr. Joesting reiterated the current NASA policy regarding SA support.

#### **XIV. Closing**

Mr. Jon Walker closed the forum by thanking everyone for their support and participation

#### **Note**

Presentations referenced in the following paragraphs are available online at URL <http://www.gsfc.nasa.gov/mscf/>.